Name: Sahib Bajwa

ID: 107553096

CSCI 3104, Algorithms **Profs. Chen & Grochow**

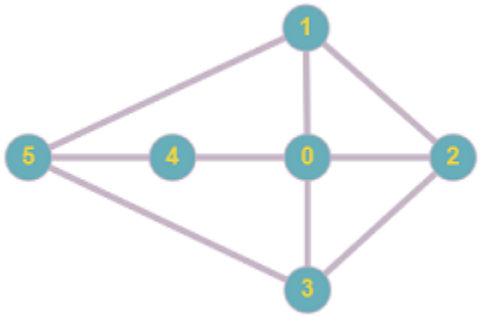
Exam 2 – S14 **Spring 2020, CU-Boulder**

Instructions: This quiz is open book and open note. You **may** post clarification questions to Piazza, with the understanding that you may not receive an answer in time and posting does count towards your time limit (30 min for 1x, 37.5 min for 1.5x, 45 min for 2x). Questions posted to Piazza **must be posted as PRIVATE QUESTIONS.** Other use of the internet, including searching for answers or posting to sites like Chegg, is strictly prohibited. Violations of these are grounds to receive a 0 on this quiz. Proofs should be written in **complete sentences. Show and justify all work to receive full credit.**

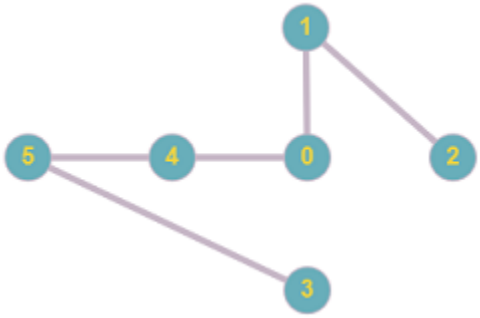
YOU MUST SIGN THE HONOR PLEDGE. Your quiz will otherwise not be graded. Honor Pledge: On my honor, I have not used any outside resources (other than my notes and book), nor have I given any help to anyone completing this assignment.

Your Name: Sahib Bajwa

Standard 14. *Consider the following graph with the source node* 4*:*



Is it possible to obtain the following tree ***(see the next page)*** *using BFS? Clearly justify your answer.*



No, it is not possible to obtain this tree using BFS. Starting with vertex 4, BFS will next consider vertices 0 and 5. If BFS considers 0 first, then edges (0, 1), (0, 2), and (0, 3) are included in the tree. If instead BFS considers 5 first, then edges (5, 1) and (5, 3) are included in the tree. In both cases, (0, 1) and (5, 3) are not both included in the tree. So this tree is not obtainable using BFS.